

REMARKS

Claims 1, 3-6, and 9-22 are presently pending in the application. Claims 1 and 3 were rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,523,177 (Brown) in view of U. S. Patent No. 4,920,533 (Dufresne) and U. S. Patent No. 3,886,454 (Oakley). Claims 4 and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brown, Dufresne, and Oakley in view of LaJoie (5,850,218). Claims 6, 9, and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of U. S. Patent No. 5,893,024 (Sanders). Claims 10, 11, and 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Brown and Sanders in view of LaJoie. Claim 8 is cancelled without prejudice, and Claims 14-22 newly added by this Amendment.

Applicants have amended independent claims 1 and 6 to more distinctly claim the present invention. The present invention is directed towards a system including a plurality of burst-mode digital transmitters coupled to a single digital optical receiver via a digital network. The system allows reverse optical signals to be transmitted to the headend, where the reverse optical signals have been passively combined at the digital network using switches, routers, and other passive techniques.. Notably, multiple optical transmitters transmit reverse optical signals at a common wavelength and they are combined at a common wavelength and transmitted via a common fiber *without wave division multiplexing or any other frequency-shifting of the signals*. This is a dramatic decrease in required equipment, compared to the system of Brown that includes DWDM multiplexers and demultiplexers as shown in FIG. 3.

Specifically, Brown teaches going from an analog system, which requires a one-to-one correlation of optical transmitters and receivers, to a digital system, which allows digital electrical combining. Brown does not teach, however, optical combining other than what is known in the art using DWDM techniques. The node 400 digitizes reverse electrical signals and then time division multiplexes them. Subsequently, a digital transmitter 418 converts the electrical signals to an optical signal and then transmits the signals to an input port of a DWDM 435.

As known in the art, wave division multiplexing (WDM) refers to any application in which optical signals at *different* wavelengths share the use of a common fiber. Dense WDM (DWDM) channel designations are channels spaced 100 GHz (about 0.8nm) to 200 GHz apart. Cable systems, for example, use 200 GHz-spaced channels that range in wavelength from 1549.32 nm to 1560.61 nm. (Modern Cable Television Technology, 2nd Edition, Ciciora, Farmer, Large and Adams, Chapter 13 Wavelength-Division Multiplexing, pages 559-564)

As taught in Brown, the DWDM 435 can receive optical signals from up to N transmitters 418. The N optical signals are combined and transmitted via a shared fiber 450 to a DWDM 470 for

demultiplexing. Finally, the demultiplexed optical signals are provided to one of N receivers for converting back to electrical signals. Thus Brown teaches the transmission of multiple optical signals at multiple wavelengths on a shared fiber using DWDM techniques. Brown does not teach, as required by the amended claim 1, that a *digital network passively combines the reverse digital optical signals from the plurality of optical nodes without performing wave division multiplexing on the received digital optical signals.*

Finally, Brown includes a DWDM multiplexer 435 and a DWDM demultiplexer 470 that have, for example, 8 input ports and 1 output port and one input port and 8 output ports, respectively. As previously mentioned, and as known in the art, the DWDM 435 receives the optical signals at 1550 nm, for example, at each port and subsequently spaces each of them 200 GHz apart prior to transmission on the single fiber. No one optical signal that is received in one of the N ports is at a common wavelength, but may be transmitted between 1549.32 nm to 1560.61 nm, for example. It is respectfully submitted, therefore, that not only does Brown not disclose the claimed subject matter, but Brown actually teaches away from the present invention by employing frequency-shifting techniques using wave division multiplexing as known in the art, rather than passive techniques, in order to perform signal combining operations.

It is therefore believed that independent claims 1 and 6 are patentable over the cited art by this argument alone since the cited art, either alone or in combination, does not teach or imply passively combining optical signals that were received by a plurality of optical transmitters. In light of the remarks, it is believed, therefore, that claims 1 and 6 are allowable over the cited art. Additionally, dependent claims 3-5 and 9-13 further limit independent claim 1 and 6, and, therefore, are also believed to be patentable over the cited art.

Claims 14-22 are newly added by this Amendment. Claims 14 and 15 are dependent claims that more particularly describes the communication system of Claim 6. Claim 16 is an independent method claim directed to the communication process conducted by the communications systems claimed in the preceding claims. Claims 17-22 are dependent claims that more particularly claim the method of Claim 16. No new matter has been entered. The newly added claims are fully supported by the text and believed to be allowable over the prior art. It is believed that the claims presented herein are allowable. Reconsideration and reexamination of the present application is requested in view of the foregoing amendment and in view of the remarks.

CONCLUSION

The foregoing is submitted as a full and complete response to the Final Office Action dated April 6, 2007. Claims 1, 3-6, and 9-22 will be pending in the present application upon entry of the present amendment, with claims 1, 6, and 16 being independent. Claim 8 is cancelled without prejudice and all rights reserved. Based on the amendments and remarks set forth herein, Applicant respectfully submits that the subject patent application is in condition for allowance. Because the claims may include additional elements that are not taught or suggested by the cited art, the preceding arguments in favor of patentability are advanced without prejudice to other bases of patentability.

Upon entry of the foregoing Response, the above-identified patent application includes 3 independent claims. Because Applicant has previously paid for 20 total claims and 3 independent claims, Applicant submits that no additional fee is due for the addition of claims 14-22. Should it be determined that any additional fee is due or any excess fee has been received, the Commissioner is hereby authorized to charge any fees which may be required or credit any overpayment to deposit account #19-0761.

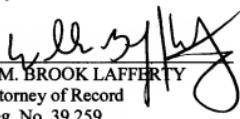
Should the Examiner have any comments or suggestions that would place the subject patent application in better condition for allowance, he is respectfully requested to telephone the undersigned agent at the below-listed number.

Respectfully submitted:

SEND CORRESPONDENCE TO:

Scientific-Atlanta, Inc.
Intellectual Property Dept. MS 4.3.510
5030 Sugarloaf Parkway
Lawrenceville, GA 30044

By:


WM. BROOK LAFFERTY
Attorney of Record
Reg. No. 39,259
Phone: (770) 236-2114
Fax No.: (770) 236-4806